

Appl. No. 10/686,357

Reply to Office Action of September 30, 2005

REMARKS/ARGUMENTS

Claims 1-3 are rejected under 35 USC 103 over JP 6-264185 on the reasoning that differences between the invention as claimed and the citation, are obvious.

Applicants respectfully disagree. The differences between the elements of claims 1 through 3 and the cited reference include the following missing elements in the art.

(Claims 1 and 2)

(1) $C < 0.06$, $Mo: 0.05 - 0.6$; $Ti: 0.02 - 0.10$

$0.8 < (C/12) / [(Ti/48) + (Mo/96)] < 1.3$

(2) Cr : none

(Claim 3)

(3) $C: 0.06 - 0.15$; $Ma: 0.3 - 0.7$; $Ti: 0.10 - 0.35$

$0.8 < (C/12) / [(Ti/48) + (Mo/96)] < 1.3$

(4) Cr : none

According to the cited reference, the ratio of C , Ti and Mo of the Steel type D in Table 2 is 1.58 (as the Examiner states), being out of the range of claims of the present application, and Cr is added in a large amount of 0.86% and is out of the range of claim of the present application.

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Further, with the cited reference, C content of the Steel type E in Table 2 is in a range of $C < 0.06$ while, Ti content is 0.143, which is out of the range of claims of the present application and moreover, Cr is included in a large amount of 0.91% which is also out of the range of claims of the present application.

The above-mentioned composition elements of the present invention are not shown or suggested from the content disclosed in the cited reference. The Examiner considers that there is no evidence of record that the claimed range is somehow critical or productive of unexpected results. Applicants respectfully disagree. The claimed composition elements of the present invention are important for the present invention to bring about the advantages thereof, as discussed below.

The present application is intended to improve workability by setting up a structure for "strengthening of precipitation by ferrite single phase + fine precipitates" and does not include, in principle, a hard second phase. Also, precipitates are compound carbides which include Ti and Mo and it is previously unknown or expected that such a complex compound described above makes precipitates fine and stabilized. For obtaining fine

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compound precipitates mentioned above, precise control of the ratio of C, Ti and Mo, as defined by claims of the present application, is required.

In contrast, the cited reference is basically composed of a dual-phase of a ferrite-pearlite phase or a ferrite-martensite phase, as set out in [0007], and there is specifically recited claim 1, "martensite at a volume fraction of 5 to 15%". As set out in [0015], addition of Cr and Mo is indispensable for securing such a compound structure mentioned above and because the formation of precipitates is not defined, addition of Cr is unavoidable, whereas positive addition is not defined according to the present application, and besides, the addition of Mo has different significance. The cited reference provides evidence of this, e.g. at the description in [0019] of JP 6-264185, stating that "TiC is precipitated." This is a clear statement that the precipitates are not compound precipitates containing Mo, but are conventionally known TiC. The cited art does not teach anything but that which was known in the art and not the present invention.

That is to say, although the magnitude of differences in terms of composition between the present application and the cited reference may not appear significant, the result of such

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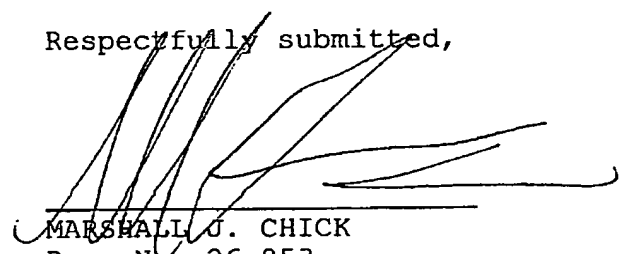
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differences are significant. The effects which are obtainable with the requirement of composition of the present application claims are extensive and if, as in a case of the cited reference, a large amount of Cr is added or the ratio of addition of C, Ti and Mo deviates from the range of the addition ratio of the present application, the effects (effects of strengthening, which secures affluent workability, by compound and fine precipitates of carbides of ferrite single-phase + TiMo) are unable to be obtained.

As has been explained above with a comparison with the cited reference, the technical concept of the present application is fundamentally different from that of the cited reference. When claims and inventive examples of the cited reference are studied, the specified condition of composition of the cited reference not within the requirements of the present application. Therefore, the present invention is not shown or suggested by the cited art. Withdrawal of the rejections and allowance of the application are respectfully requested.

Frishauf, Holtz, Goodman
& Chick, P.C.
220 Fifth Ave., 16th Floor
New York, NY 10001-7708
Tel. No. (212) 319-4900
Fax No.: (212) 319-5101
MJC/lid

Respectfully submitted,


MARSHALL J. CHICK
Reg. No. 26,853